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## NOTICES FROM THE LICK OBSERVATORY.\*

PREPARED BY MEMBERS OF THE STAFF.

### REDISCOVERY OF TEMPEL'S SECOND PERIODICAL COMET, *c* 1899.

This comet was rediscovered by the writer, on May 6th, with the 36-inch refractor. Its position at the time of rediscovery was, —

May, 6<sup>d</sup> 21<sup>h</sup> 47<sup>m</sup> 4<sup>s</sup>, G. M. T.;    R. A. 18<sup>h</sup> 52<sup>m</sup> 57<sup>s</sup>.78  
Decl. — 4° 32' 19".1

This position is very close to that predicted for it by SCHULHOF, in No. 3554 of the *Astronomische Nachrichten*. Following are the very small residuals from the ephemeris:—

Obs.—Comp.: R. A. — 5<sup>s</sup>.61; Decl. — 12".9

It is very small and faint, not being over 10" in diameter and 15½–16 magnitude. It is brighter at the center, with some indications of a nucleus.

This comet was first discovered at Milan, by WILHELM TEMPEL, on July 3, 1873, and was soon found to belong to the family of comets having short periods — its period being 5.2 years. It was reobserved in 1878, escaped detection at the next two returns to perihelion, but was again discovered in 1894.

It seems to be growing fainter at each return, if the law of brightness, as expressed by the formula  $\frac{1}{r^2 \Delta^2}$ , holds even approximately, for at its last observation, in 1878, by TEMPEL, its theoretical brightness was 0.113. In 1894, FINLAY describes it at the time of discovery as eleventh magnitude or fainter, its theoretical brightness on the above assumption being 0.190. At the present apparition its theoretical brightness is 0.475, while its observed brightness is only a fraction of the preceding — 15½–16 magnitude.

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It is known that comets do not follow closely this law of brightness, but the deviations in this case seem larger than usual.

The comet's perihelion distance being 1.35, and the Earth being near that longitude at the same time, will cause this apparition to be one of the most favorable possible — the Earth and comet approaching each other to a distance of only thirty million miles.

The disturbing action of *Jupiter* is well illustrated in this case. M. SCHULHOF states that although the comet did not approach *Jupiter* nearer than 1.9 units, the time of perihelion was retarded more than fifteen days.

C. D. PERRINE.

MT. HAMILTON, 1899, May 9.

#### THE ORBIT OF COMET 1896 III.

Comet 1896 III was discovered by Dr. LEWIS SWIFT, at the Lowe Observatory, on April 13, 1896, [see *Publications A. S. P.*, No. 50, page 93]. During its apparition period, which extended to June 20, 1896, the comet passed through a heliocentric arc of  $105^{\circ}$ , —  $4^{\circ}$  before perihelion passage, and  $101^{\circ}$  after, — and was observed more than four hundred times at thirty-seven different observations.

Having collected all the observations, I combined them into seven normal places, and from the resulting fourteen equations of condition deduced, by the method of least squares, the following most probable set of

#### HYPERBOLIC ELEMENTS.

$$\begin{aligned} T &= 1896, \text{ April } 17.6473143, \text{ G. M. T. } \pm 0^d.0005733 \\ \pi &= 179^{\circ} 59' 15''.40 \pm 3''.95 \\ \Omega &= 178 \ 14 \ 51 \ .48 \pm 6 \ .74 \\ i &= 55 \ 34 \ 24 \ .69 \pm 8 \ .88 \end{aligned} \left. \begin{array}{l} \\ \\ \\ \end{array} \right\} \begin{array}{l} \text{Mean Equinox and} \\ \text{Equator of 1896.0} \end{array}$$

$$q = 0.5662857 \pm 0.00001347$$

$$e = 1.0004757 \pm 0.00009985$$

The details of the computation will be found in *Astronomische Nachrichten*, 3550–51.

The interesting element in this orbit is the eccentricity, which shows that the comet's path around the Sun was an hyperbola.

In the few cases where a definitive investigation of a comet's orbit has indicated an hyperbolic curve, doubt has usually been thrown upon the result. In the case of the earlier comets, the